

Work Plan for Fiscal Year 2003

I. Program Title Tracy Pumping Plant CVPIA Section 3406(b)(4) Tracy Fish Test Facility Project

II. Responsible Entities

	Agency	Staff Name	Role
Lead	USBR	Ron Silva	Project Manager
	USBR	Richard Raines	Environmental Specialist
	USBR	Louisa Beld	Project Support
	USBR	Charlie Liston	Research Director
	USBR	Mike Lee	Spec and Engineering Review and Support
	USBR	Lauren Carly	Construction Management
	USBR	Art Glickman	Design and Construction Support
	USBR	Diana Weigmann	Biological Studies and Laboratory Models
	USBR	Robert Edwards	Tracy Office Program Implementation
	USBR	Joseph Pennino	Infrastructure Planning and Design
	USBR	Marian Echeverria	Public Involvement
	USBR	Jane Scott	Land Acquisition
Co-Lead	USFWS	Mike Thabault	
	USFWS	Ryan Olah	Fish and Wildlife Tech Assistance

III. Program Objectives for FY 2003

- A. Improve Fish Protection and Fish Salvage at Tracy Fish Collection Facility (TFCF).
Action is in compliance with CVPIA 3406(b)(4), Biological Opinions for Winter-Run chinook, Delta smelt, Sacramento Splittail, Central Valley Steelhead, and the July 1992 "Agreement with California Department Fish and Game (CDFG to Reduce and Offset Direct Fish Losses Associated with the Operation of the Tracy Pumping Plant and the Tracy Fish Collection Facility."
- B. Determine Best Practical Fish Protection Technology for making Long-term Future Improvements at Tracy and Other South Delta Facilities Proposed by CALFED - Integral to CALFED's South Delta Program and is in conformance with the ROD and Framework documents released last year.
* Species Benefitted - Chinook salmon (fall- and winter-run), Steelhead, Delta smelt, Splittail, Sacramento blackfish, Longfin smelt, Striped bass, and American shad.

IV. Status of the Program.

The Tracy Fish Test Facility (TFTF) will be a new fish screening technology development and evaluation facility located adjacent to the existing TFCF in the South Delta. The TFTF will develop critical information for new fish screens and salvage technology for the Delta export facilities at Tracy and at Clifton Court Forebay, and a possible screened through Delta facility on the Sacramento River. The TFTF will allow for the testing and evaluation of new facilities for fish screening, holding, sorting, and transportation in the South Delta which is influenced by tides, heavy debris loads, and a mix of 51 species. The completed facility will include a 500 cfs test channel, new state-of-the-art fish screens, new fish friendly lifts, holding and sorter facilities in one large enclosed building, fish transfer/off loading facilities to fish tanker trucks, debris and sediment management structures, and support infrastructure including laboratory, office, and maintenance buildings. The TFTF is being designed by Reclamation with the oversight and assistance of a multi-agency coalition of fish facility experts pursuant to a "Project Management and Organization Agreement" signed by involved regulatory and water interests. The TFTF Project is being implemented as part of Section 3406(b)(4) of the CVPIA, and is integral to CALFED's South Delta Program. Funding sources include appropriations from Reclamation, the State of California, and CALFED.

V. FY 2002 Accomplishments. (Note: Additional accomplishments have been included to facilitate reviewer's understanding of this complex and comprehensive program for developing new fish facility technology for the Delta of California.)

- C February 19, 1999 - NOI in Federal Register
- C March 17-18, 1999 - Public Scoping Meetings
- C April 6, 1999 - CALFED's Policy Group agreed that Reclamation should proceed with the planning of a 500cfs fish screen facility for testing and evaluating new technologies.
- C June 1999 - CALFED Bay Delta Program Draft EIS - included the proposed 500 cfs structure
- C September 1999 - Agreement on Project Management and Organization for the TFTF and Clifton Court Fish Facility was signed by Reclamation, Service, Department of Water Resources, CALFED, CDFG, and National Marine Fisheries Service (NMFS).
- C Monthly Tracy Technical Advisory Team (TTAT) meetings have been held since November 1998 which has resulted in a preferred option for the test facilities
- C Value Engineering Study - February 10, 2000 - identified a number of actions to reduce costs
- C Project Management Plan - May 15, 2000 - road map to all activities and tasks for the Program, established 12 task teams
- C Draft EA/IS released for public comments July 28, 2000
- C Framework and Agreements Document - provides a continuous record of all decisions agreed to by the TTAT, Central Valley Fish Facilities Review Team and Coordination Team

- C Site Infrastructure Workshop - May 2000 - building, additions, upgrades, staffing, resources
- C Site Infrastructure Workshop Final Report - August 14, 2000 - recommendation
- C Final Feasibility Report - August 14, 2000
- C 30% and 60%, and preliminary 90% Design Reports (recent design changes will require another 90% report)
- C Public Workshops for the Environmental Assessment Impact Statement - August 15, and 16, 2000
- C Developed Fishery Engineering Flumes at Denver where TFTF Research and Technology Development has been ongoing since 1998
- C Research Studies at Tracy Site for TFTF including leaky louver efficiencies , traveling screens for debris control, and fish friendly pumping tests-ongoing since 1998
- C Research Studies for TFTF at Red Bluff Pumping Plant on fish friendly lifts and screens have been ongoing since 1995
- C UCD Studies - working with the UCD to cooperate on laboratory studies needed to refine facilities to be built at the TFTF
- C CDFG Studies- are exploring new fish distribution and stocking strategies to compliment the new facilities
- C Establishment of Research Team – Tracy Fish Research Evaluation and Deveopment, for developing the test procedures and evaluations to be conducted at the TFTF
- C Specific Research conducted for 2002 included:
 - Laboratory evaluations of the TFTF fish sorting and holding tank physical model
 - Leaky louver and fish crowder studies using the Denver large flume for TFTF
 - Fish passage trials using the internal helical pumps and archimedes lifts at Red Bluff and TFCF
 - Experimental investigations of a circular fish separator concept
 - Light traps for collecting early life stages of fish at TFCF
 - Mathematical model of fish behavior in screened channels
 - Evaluation of Dual-Frequency Identification Sonar (DIDSON) for direct observation of fish movement and behavior near structures
 - Development of data management technical web site and enhanced data accessibility

VI. Tasks, Costs, Schedules and deliverables.

A. Narrative Explanation of Tasks.

1. Program Management

1.1 Project Management - Planning, budget oversight, and coordination of all activities and offices associated with this multi-year program is accomplished by the Project Manager.

1.2 Public Involvement - Reclamation staff from the Public Affairs Office are responsible for the public outreach activities, maintaining and updating the telephone information line, maintaining and updating the website, managing the development of a project video, and preparing and distributing project newsletters. A contract has been awarded to a consultant to assist with the

Public Involvement aspects of this large and complex project.

- 1.3 Tracy Office Program Implementation - Reclamation staff from the Tracy Office are responsible for assisting the planning and coordination of all activities and offices associated with this multi-year program.
- 2 Fisheries Engineering Research Program - Research continues on a number of subtasks at either the Denver Technical Service Center/Research Hydraulics Laboratory or at the TFCF. Study Plans are currently under development which will then be provided in August 2002 to the interagency Tracy Technical Advisory Team which oversees activities associated with improving or researching new technologies for the TFCF.

The Following are the proposed research activities for FY 2003. Costs for each of the following sub-tasks will be available after the Tracy Technical Advisory Team has reviewed and commented on proposed study plans and a decision can be reached on which studies will be undertaken with the funding available for this Research Task.

- 2.1 Fish collection, handling, transport, and release (CHTR) evaluation and research program.

Complete systematic review of existing information on CHTR systems
Identify critical questions or data gaps concerning the impacts and potential benefits of CHTR systems on Delta smelt. Identify and implement studies to address these questions. Provide information on the feasibility of successful CHTR systems for Delta smelt. Provide information to assist the design and implementation of new fish screenings.

- 2.2 Recovery of lost fish and assessment of a new fish lift installed behind secondary louvers at Tracy

Recovery of fish behind secondary louvers that would otherwise be lost will increase the amount of fish we can effectively salvage and potentially use in the on-going research program
Transferring fish from the secondary channel at Tracy will involve use of "fish friendly lifts and above ground holding tank.
These studies will assess engineering adaptability and performance, and fish passage success for critical species and others. Fish assessments will be done by observing naturally entrained fish as well as by experimental injections of marked fish. Success will lead to major breakthroughs in using this technology to enhance future fish salvage facilities in the Delta.

- 2.3 Evaluations of the TFTF laboratory fish sorting and holding physical model
The fish sorting and holding model at Denver is critical for guiding design and future testing of the large fish sorting and holding facility under development for TFTF

Testing in FY2003 will continue with hydraulic refinements, and with focus on testing passive and active fish sorters in series for important species at Tracy; light and dark trials will be accomplished, and debris interference with fish sorting will be tested.

Sorters using downwelling, upwelling, and even flow conditions will be Compared.

2.4 Leaky louver and fish sorting studies in Denver's large experimental flume.

The large Denver flume is providing critical data for designs and operations of key features planned for the main experimental channel of TFTF. Most effective positioning, slot size and angle, and hydraulics of the leaky louver were unknown until experiments on the large flume were instigated (leaky louvers are experimental and designed to separate out large fish predators from fish prey up front in TFTF); further, information on potential vertical fish sorters for TFTF (gravity bypass side) can be ascertained with this study. Both dark and light trials will be conducted to determine light conditions under which the sorting effectiveness of the louver is most favorable. Fish crowder studies will continue using mobile devices designed in FY01 to enhance downstream movements of fish in the flume, in anticipation of their need for TFTF.

2.5 Fish passage trials using the Tracy internal helical pump.

Work will continue on this new technology now designed for testing at the future TFTF. Trials with key species (steelhead, wagasaki smelt (delta smelt also if available), striped bass, and threadfin shad) were very successful, demonstrating nearly 100 percent survival of passed fish (both control and pump-passed fish). Old River fish entrained incidentally with the experimental fish passage trials have also exhibited very high survival (this includes hundreds of juvenile Delta smelt entrained in May FY03 work will expand the data base more using an oval above ground holding tank in conjunction with the fish friendly pump. Extended pumping trials (several hours) will be included to determine survivorship of entrained and experimental fish exposed to the oval onground tank fitted with traveling dewatering screens on each side.

2.6 Validation and refining individually based models of fish screen efficiency.

Modeling will be continued in partnership with Utah State University to document louver efficiencies as a function of channel velocities. Modeling will look at by-pass ratio as a function of Delta smelt louver Efficiency. The models will guide future studies on a multitude of louver configurations and hydraulic variances to be tested without the need to physically set up labs and conditions; from these numerous mathematical trials, the most efficient louvers for use either in the traditional way or the experimental "leaky" louver way can be ascertained

2.7 Studies on condition of fish entering the TFCF.

Many fish entering the South Delta fish facilities appear injured and diseased, especially in high water temperatures seen in summer. This needs to be documented further, in light of new facilities being planned. Sampling devices (tethered netting systems with live wells attached at back for gentle collecting) will be developed to collect naturally entrained fish at the trash racks. Techniques for experimental fish insertion into the nets will also be

developed to discern if netting is harmful. Collected fish will be examined with standard techniques for condition, and live fish will be held for 24 hours to determine any delayed losses.

2.8 Studies on tracking fish movements inside fish salvage facilities using telemetry.

Studies to develop potential methods for accurately assessing fish predator and prey movements and positioning inside salvage facilities will continue. Both radio tagging and sonic tagging will be examined for eventual expanded use in the TFTF. New techniques using small “pinger” tags for juvenile salmon and striped bass will be given special effort. (Fish are fitted with a small sonic emitting device and the signal is picked up with sonic receivers; now being used in the Pacific Northwest to track salmon around dams). Ability to use these techniques in the TFTF would be extremely valuable in determining if fish are “residing” or “hanging out” in the system, where, and under what hydraulic conditions.

2.9 Evaluation of the Tracy mitten crab traveling screen as a potential device for continuous woody debris removal.

The Tracy mitten crab screen has proven exceptional during fall months in removing mitten crabs while not impeding fish passage. The screen also appears effective in removing significant of vegetative debris. This study will quantify woody debris removal rates by the screen over different seasons and will assess the potential for inclusion of this device for removing both crabs and woody debris in the future TFTF facility. A new conveyor device on the screen will allow for many replicated and quantified samplings, with simultaneous data taken off the screen and in the downstream holding tanks. Successful debris removal may prove extremely valuable in new salvage facilities that are incorporating small mesh positive barrier screens.

2.10 Completion of past larval fish data analysis at Tracy, including report.

Significant amounts of larval fish entrainment data using a pump with moving orifice were collected in the 1990's at Tracy. Data are readily available and require summarization and analysis information which would be valuable to CALFED programs examining potential water diversion sites for future fish salvage facilities. A Tracy Technical Report would be provided and peer reviewed, and distributed to all interested parties in the Delta.

2.11 Development of a data management, technical web site, and enhanced data accessibility for future TFTF research and testing.

TFTF studies will require standardized and efficient data acquisition methods, quality control checks, efficient transfer to computer files, rapid methods for analysis and distribution, and easy accessibility for researchers and managers. FY03 work will concentrate on the following:

CDesign and document Access data base

CComplete HTML coding of draft website and distribute for comments

- CActivate website on Reclamation Intranet
- CIdentify and implement LAN and web security protocols
- CDocument web design, data base structure, and procedures for research data quality assurance
- CIdentify nature of sensor array for TFTF
- CFinalize coordination process with Interagency Ecological Program
- 3. Finalize Environmental Assessment/Initial Study, FONSI/Negative Declaration.
Reclamation staff from the Denver Technical Service Center are responsible for the preparation of all documentation necessary for compliance with the National Environmental Policy Act and the California Environmental Quality Act.
- Complete Designs and Specs
- 4.1 Design - Reclamation staff are responsible for the completion of the designs.
- 4.2 Engineering Review and Support - Reclamation staff are responsible for the engineering review and support during the design process.
- 4.3 Spec Package - Reclamation staff are responsible for the completion of the spec package.
- 5 Construction of the Test Facility
- 5.1 Construction Contract - Contractors will be used to construct the TFTF and to manufacture pumps prior to award of TFTF construction. Pumps will be Government furnished property. Construction of TFTF will consist of several contracts (see Attachment 2).
- 5.2 Construction Management - Reclamation staff are responsible for construction management.
- 5.3 Construction Support - Reclamation staff are responsible for construction support during the construction of the facilities and pumps.
- 6. Support Buildings and Infrastructure
- 6.1 Planning and Design - Reclamation staff are responsible for the completion of the planning and design.
- 6.2 Construction Contract - Contractors will be used to construct the Tracy Fish Site Improvements
- 7. Land Acquisition
- 7.1 Reality Activities - Reclamation staff are responsible for all the negotiations and documentation for all the reality activities, including the acquisition of the easements and in-fee titles required for the TFTF and TFSI.
- 7.2 Land Acquisition - Reclamation staff are responsible for the purchase of the required easements and in-fee titles.

Should funds become limited and not allow total program accomplishment in FY03 as provided in this AWP, certain minimum levels of funding will be necessary to prevent either abandonment of the Program, or, seriously delaying the Program, thus resulting in significant stranded costs. If total anticipated funds are not provided in FY03, any fund reductions would be taken from the amounts required for the first phase of the construction contract and/or related

program tasks resulting in a delay in the construction schedule. Additional funding would be required in FY04 to replace amounts not made available in 03.

Priority tasks that need to be funded as a minimum in FY03 include:

- 1.1 Program Management
- 2 Fisheries Engineering Research Program
- 4.1 Design
- 4.2 Engineering Review and Support
- 5.1 Construction Contract for Site Work
- 5.2 Construction Management
- 5.3 Construction Support
- 6.1 Planning and Design of Infrastructure Buildings and Support
- 6.2 Construction Contract for Phase I Infrastructure
- 7.1 Realty Activities

The above funding for FY03 will facilitate proceeding with construction of the TFTF when additional funds do become available in FY04. It also assumes that all permitting and environmental documentation requirements will have been completed beforehand.

B. Schedule and Deliverables

#	Task	Dates		Deliverable
		Start	Complete	
1	Program Management	10/01/02	09/30/03	Program Coordination, Budget Oversight, Team Leader assignments and direction
1.1	Project Management	10/01/02	09/30/03	Obtain all required environmental permits, develop schedules, coordinate team acts
1.2	Public Involvement	10/01/02	09/30/03	Public Involvement Plan, Public Outreach, TTF Video documentary
1.3	Tracy Office Program Implementation	10/01/02	09/30/03	Review specifications, continue aquaculture facility operation and development, support for land and permitting actions
2	Research Program	10/01/02	09/30/03	Complete study plan, implement studies, model development
3	Environmental Documentation	10/01/02	11/01/02	Complete NEPA and CEQA compliance. Complete FONSI
4	Complete Designs and Specs	10/01/02	09/30/03	
4.1	Design	10/01/02	12/15/02	Revise Concept Plans, Complete Final TTF designs
4.2	Engineering Review and Support	10/01/02	12/15/02	Review TTF designs, provide design data
4.3	Spec Package	12/15/02	10/15/03	Assemble spec package for bid, Award
5	Construct the Test Facility	10/01/02	09/30/03	
5.1	Award/Initiate Construction	05/15/04	01/25/06	Begin construction of the TTF, to be completed in 2006
5.2	Construction Management	10/01/02	09/30/03	Review bids and submittals, oversee construction, utility agreements and relocations
5.3	Construction Support	10/01/02	09/30/03	Specifications and drawings preparation
6	Support Buildings/Infrastructure	10/01/02	09/30/03	
6.1	Planning and Design	10/01/02	12/15/02	Complete Phase 1 Infrastructure designs, infrastructure planning, coordination, and budget oversight
6.2	Construction Contract	07/19/03	07/18/04	Begin construction of Phase 1 Infrastructure
7	Land Acquisition	10/01/02	09/30/03	Title report, prepare offer and contract, other easements
7.1	Reality Activities	10/01/02	09/30/03	Acquire South of DMS land

C. Summary of Program Costs and Funding Sources.

			Funding Sources		
#	Task	Total Cost	RF	W&RR	Prop 13
1.1	Project Management	\$250,000		\$250,000	
1.2	Public Involvement	\$135,000	\$135,000		
1.3	Tracy Office Program Implementation	\$450,000	\$450,000		
2	Research Program	\$1,600,000	\$1,600,000		
3	Environmental Documentation	\$10,000	\$10,000		
4.1	TFTF Design	\$2,100,000	\$2,100,000		
4.2	Engineering Review and Support	\$575,000	\$575,000		
5.1	TFTF Construction Contract	\$19,600,000			\$19,600,000
5.2	Construction Management	\$300,000		\$300,000	
5.3	Construction Support	\$90,000	\$90,000		
6.1	Support Buildings & Infrastructure Design	\$750,000		\$750,000	
6.2	Construction Contract	\$1,000,000			\$1,000,000
7.1	Reality Activities	\$25,000	\$25,000		
	Total Program Budget	\$26,900,000	\$5,000,000	\$1,300,000	\$20,600,000

D. CVPI A Program Budget

#	Task	FTE	Direct Salary and Benefits Costs	Contracts Costs	Miscellaneous Costs	Administrative Costs	Total Costs
1.1	Project Management	2.0	\$160,000	\$25,000	\$15,000	\$50,000	\$250,000
1.2	Public Involvement	.12	\$7,000	\$128,000			\$135,000
1.3	Tracy Office Program Implementation	4.0	\$320,000	\$50,000	\$30,000	\$50,000.00	\$450,000
2	Research Program			\$1,600,000			\$1,600,000
3	Environmental Documentation			\$10,000			\$10,000
4.1	TFTF Design			\$2,100,000			\$2,100,000
4.2	Engineering Review and Support	4.0	\$320,000	\$200,000	\$25,000	\$30,000	\$575,000
4.3	Spec Package	0.15	\$15,000				\$15,000
5.1	TFTF Construction.			\$19,600,000			\$19,600,000
5.2	Construction Mngt	4.0	\$300,000				\$300,000
5.3	Construction Support			\$90,000			\$90,000
6.1	Support Buildings & Infrastructure Design	6.0	\$440,000				\$440,000
6.2	Construction Contract			\$1,000,000			\$1,000,000
7.1	Reality Activities	0.25	\$25,000				\$25,000
	Total by Category	16.52	\$1,587,000	\$25,003,000	\$120,000	\$190,000	\$26,900,000

VII. Future Years Commitments/Actions.

The approximate budget to complete the TFTF is as follows:

	FY04	FY05
Planning, Design, and Research	\$10.0 mil	\$10.0 mil
Construction Contracts	\$30.0 mil	\$15.0 mil
TFTF Staffing	<u>\$1.5 mil</u>	<u>\$1.5 mil</u>
Total	\$41.5 mil	\$26.5 mil